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Carstensen, Doris [Hrsg.]; Barrios, Beate [Hrsg.]: Campus 2004. Kommen die digitalen Medien an den Hochschulen in die Jahre? Münster u. a. : Waxmann 2004, S. 145-156. - (Medien in der Wissenschaft; 29)

GMW
Gesellschaft für Medien in der Wissenschaft e.V.

MEDIEN IN DER WISSENSCHAFT : BAND 29

Doris Carstensen
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Waxmann Münster / New York
München / Berlin

Bibliografische Informationen Der Deutschen Bibliothek
Die Deutsche Bibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.ddb.de abrufbar.

Medien in der Wissenschaft, Band 29
Gesellschaft für Medien in der Wissenschaft e.V.

ISSN 1434-3436
ISBN 3-8309-1417-2

http://www.waxmann.com
E-Mail: info@waxmann.com

Umschlaggestaltung: Pleßmann Kommunikationsdesign, Ascheberg
Titelbild: Wolfgang Hummer
Satz: Stoddart Satz und Layout Service, Münster
Druck: Runge GmbH, Cloppenburg
gedruckt auf alterungsbeständigem Papier, DIN 6738

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Die 5%-Hürde

Gilbert Ahamer

Rules of the new web-supported negotiation game "SurfingGlobalChange"

Game for your mark!

Abstract

A negotiation oriented and partly web based game "SurfingGlobalChange" (SGC) was freshly invented and implemented by the author for use in advanced interdisciplinary university courses in the spirit of 'blended learning'. Didactics of SGC is grounded in "active, self-organized learning", training of "competence to act" and responsibility for both practicable and sustainable solutions for the future society.

This paper presents the rules of the game, which was implemented four times at Austrian universities, and hints to other texts on didactics and practical experiences.

The outlay of SGC aims at weighing out competition vs. consensus, self-study vs. team work, sharpening the own standpoint vs. readiness to compromise, differentiation into details vs. integration into a whole and hence wants to mirror professional realities. In this spirit, the architecture of SGC gives a framework for "game based learning" along five interactive game levels:

1. learn content and pass quizzes
2. write and reflect a personal standpoint
3. win with a team in a competitive discussion
4. negotiate a complex consensus between teams
5. integrate views when recognizing and analyzing global long-term trends.

The set of game rules acts as a boundary condition for expected processes of social self-organization. Interest for a good mark (resulting from collected rewards) steers team size, work attitude and individuals' affinity to sticking to own convictions when substantiating consensus. SGC's rules trigger two distinct processes: social dynamics among peer students in the class and their individual strive for marks for the course. These two targets provide useful tension during game play.

1 Foundation of the game SurfingGlobalChange

The *didactic goal* of this game is that students are trained for their personal proactive and responsible professional role in building a sustainable global society. Didactic and pedagogic foundations are extensively described and reflected using published literature in (Ahamer, 2004) but only hinted at here given limited availability of space.

Fig. 1: Roots and shoot of SGC

The *learning goal* of the entire 5-level game (logo in Fig. 1) "SurfingGlobal-Change" is to master the procedures of consensus building as prevalent and demanded in many developed societies.

In more detail this means (compare Fig. 2):

- create and organize a team (social self-organization)
- find and report scientific, technical and political information (academic research)
- enumerate and weigh the principal effects of a professional project (assessment)
- prepare the team's standpoint on the basis of collected material (argumentation)
- defend the team's standpoint in a discussion (implementation)
- try to create consensus between several actors based on arguments.

The *history* of SGC is characterized by representing the third of three "generations of web based teaching", this historic genesis is reported in a separate contribution. SGC was invented and developed by the author during the last years; during one person-month he conceptualized web based gaming in the framework of the EU project "UniGame" coordinated by FH Joanneum.

2 The rules of the game SurfingGlobalChang

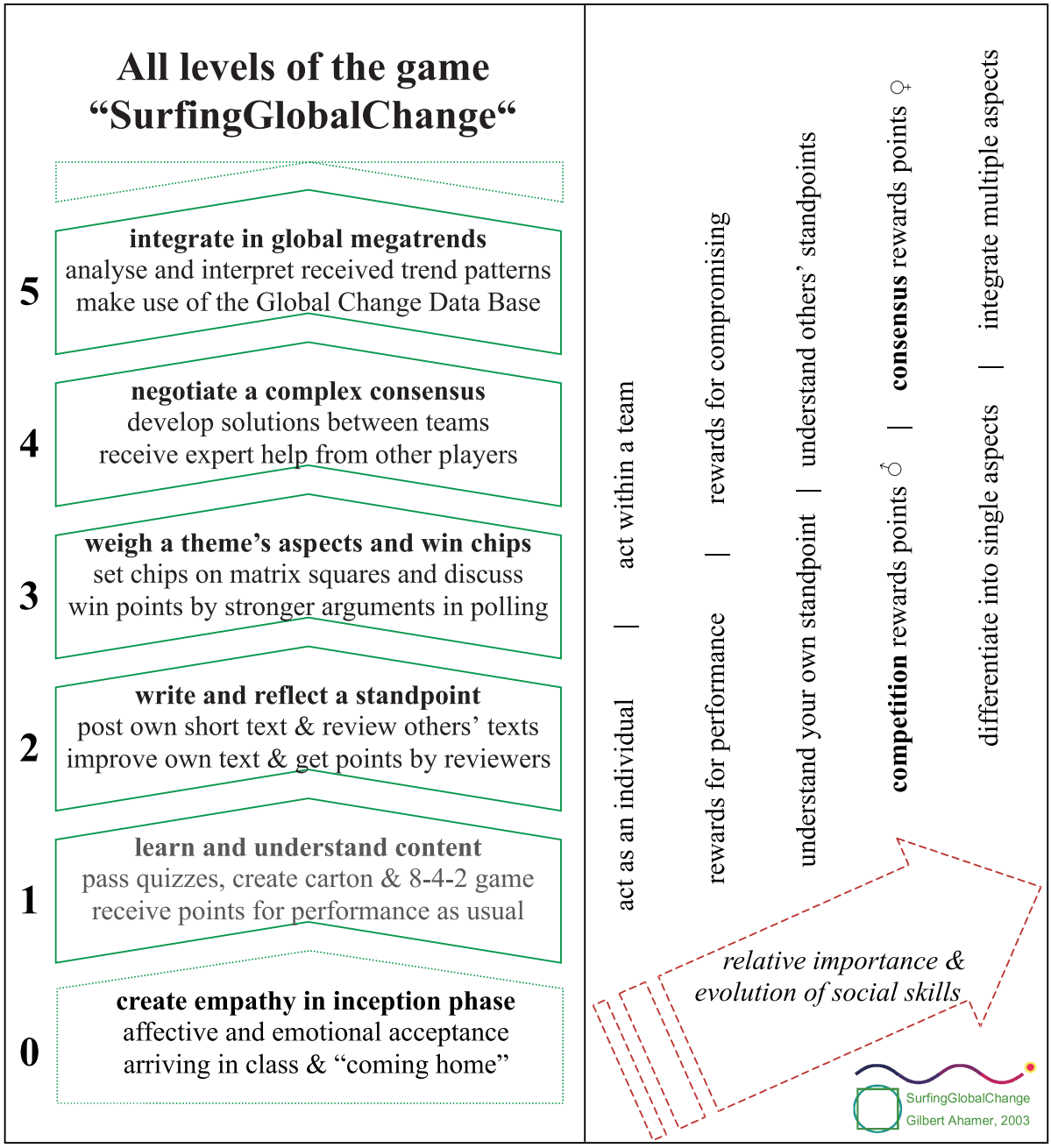

Fig. 2: Brief architecture of the entire game SGC: five levels build upon each other

2.1 Inception phase: introductory course

Experience has shown that it is helpful to acquire a sufficient level of knowledge in the first place. In the case of last year's courses on "Technology Assessment", "Systems Analysis", "Environmental Technology" (Ahamer, 1999) and "Global Change", the students have been provided during their preceding four years of studies with a level of technologically oriented knowledge that seemed sufficient.

Hence delivery of content in the classical sense is focused on *procedural knowledge*, which is held to constitute "relevant learning" (Rogers, 1974): like for example the ten major steps in "technology assessment" processes (see Rakos et al., 1988) or the characteristic forms of "systems thinking" (see Ossimitz, 2000). Deliberately, the generation of task-centered knowledge and the generation of a fact base are left to the students because the process of sieving available information (e.g. from the internet) is already an important step when creating opinions.

Intentionally, the inception phase (amounting to e.g. a block of an entire day if the entire game spreads across 4 hours/week in a semester) was kept at slow pace in order to allow students to become accommodated with the 'unusual' course target, the technicalities of the web platform and its facilities and resulting necessities for obliging intra-class communication.

Apart from procedural knowledge, *positive affection* related to the courses' targets was held essential by the trainer and enough time was devoted hereto. For that target, an initial web based survey with 10 questions such as "what are your expectations" was undertaken. On the technical level, this "initial survey" also accommodated students to the quiz environment so that they would encounter less difficulty in the exam situation later on.

Summing up, the introductory phase sets out to *accommodate students* with the targets of this game, its background, its procedures & technicalities and the social and procedural aims, but also to deliver basic *fact-oriented knowledge* to a necessary extent. This *level 0* phase should create empathy among students and prepare team building.

Result of level 0 is *empathy* with the subject and with the targets of SGC.
Social setting is conversation and presentation during some days in the classroom.

2.2 Rules for level 1: understand content and sharpen target

During the subsequent level 1 (or if necessary also a second time later on),

- a *web based quiz* is held during class that plays the role of a traditional written exam.

(success in web based quiz) = points ♂

Points collected there contribute roughly ⅓ to the final mark of the students.

A rather simple and common interactive game serves to sharpen perception of the factual setting of the task: a modified "8-4-2 words" game (Thiagarajan, 2001) should help students to further focus on the target of the game. Three questions for definitions of key terms like 'Global Change' or 'sustainability' are posed and are iteratively elaborated in the following way using the web platform:

- each student anonymously posts an answer in 8 words during class
- all students are presented the answers (= definitions) anonymously and cast a vote for the best one including a short sentence of explaining their decision
- the statistical result is displayed by the trainer together with the (anonymous) total of explanations in order to allow for a learning effect
- for each posting or voting action a student receives one point from the trainer
- the same procedure as above starts with 4 words, then with 2 words
- aim: viewing other colleagues' answers allows for rethinking the own perception in an undisturbed and private atmosphere without social pressure.

(each posting or voting in the web platform for the 8-4-2 game) = 1 point ♂

In order to increase the students' early awareness of the problem structure,

- the future two "*thematic cartons*" (e.g. having the structure of a 3x4 matrix) can be designed together with the students in an iterative procedure.

The sense of this preparatory exercise is to provide a first identification of the project's side-effects in the spirit of TA. Two cartons are necessary for playing SGC.

Summing up, level 1 should incite students to discern and *define their area of interest* as well as to *sharpen the perception of the chosen theme*, to differentiate the basic aspects of the intended project theme but also to digest underlying fact-oriented and technical knowledge (Barrows, 2002). Substrate of web based interaction is simple and one-dimensional definitions on the spot.

Result of level 1 is understood key *content*.

Social setting is slight and anonymous competition during class mediated via web that has no effect on the resulting points and lasts units of one hour.

2.3 Rules for level 2: write and reflect a standpoint

After having learned and understood basic content, students "warm up" for levels 3–4 and head for the first truly interactive and differentiated web based activity: they prepare an own standpoint based on a profound search in library, other literature and internet during one week's time. Individually acting students obey the following rules:

- each student selects a subject according to his choice within the limits defined by the trainer (e.g. single aspects of the chosen theme or other case studies) until a predefined deadline
- each student posts under her/his name in the discussion forum a text of one page per person (trainer defines: exactly or minimum 1 page)
- in case students would wish to form groups they consequently are to post a document with as many pages as students
- during all the rest of the course all posted texts are free for review: each single student downloads the text document (at home or in the university building), reads it, comments it and writes these comments into the last version making use of the functionality "mark changes" which is common to programs like MS Word
- the reviewing student posts the commented document by making use of the "reply" function in the discussion forum thus creating an extra thread for each initial standpoint and its comments regardless of the time of posting
- together with his named comments the reviewer grants to the author a number of points (n). The reviewer can choose between one and five points as a reward for the author's quality of work
- in case the reviewed author decides to post an updated version of his text, all reviewers prior to that point in time receive their reward for review (5-n) which is equal to the difference between the points granted and the maximum of five
- each student may review each other, the only restriction being (in order to avoid gifts) that a reviewed person cannot review her/his reviewer
- additionally, the trainer reads the final versions of all papers and grants points.

This level 2 formula

(reviewer's potential reward) = 5 points ♂ – (author's reward granted by reviewer)

tries to introduce a momentum of game, risk and strategy into the originally merely fact-oriented review process, as reviewers will compromise between the colleagues' definite advantage and their own potential advantage. This formula sets out to create border conditions for optimization of text quality employing the vehicle of "striving for one's own profit".

Summing up, level 2 should lead students to *view, compose, reflect and update a concise standpoint of their own*. This activity clearly excels minimalist copying text fragments downloaded from the web as this level exerts an own statement and a declaration of pro's and con's for a limited and single thematic aspect.

Result of level 2 is one argued and substantiated *standpoint* per student.

Social setting is constructive critique & slight competition between named partners under almost no time constraints during several weeks.

2.4 Rules for level 3: weigh aspects of a theme

After having decided on two (because one half of class is discussing, the other half observing) concrete themes and after the decision for a suitable matrix

- the students decide which role (which type of actor) they want to take as a team inside the chosen theme, e.g.
  - proponent of the (building) project,
  - civil authority deciding on the permission to implement this project (e.g. by means of an environmental impact assessment procedure EIA)
  - lobby of economy and industry
  - lobby of the environmentalists
- the generation of teams is governed by the formula

(individual's points ♂) = (team's points ♂) / (number of team members)

  therefore the team size is expected to be optimized between very small (not enough manpower) and very large (too little share of reward) team size
- each team has one team speaker for communicating decisions externally
- only the team speaker is named to the trainer, the process of team generation, constitution and definition of internal roles is left to the students
- team leaders have the right to expulse members (e.g. if not collaborating)
- the students have one week of time for preparing common and agreed standpoints in teams (2 pages / person) on the theme that was agreed on beforehand
- after one week the (mostly four) teams are to post their standpoint in form of a consistent and outweighed document into the web platform

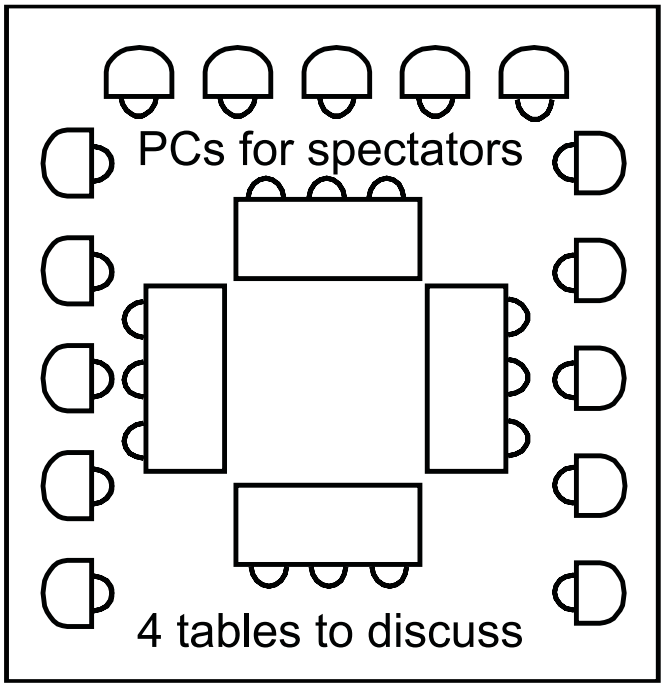

Fig. 3: Suitable classroom

- on the day of the level 3 game, all single teams are asked to sit at their tables in the center of the class room (inner part of Fig. 3) and they are given a sheet of paper with the matrix (e.g. 3x4, showing headings for rows and columns as well as definitions for each matrix square similar to Tab. 1)
- as outlined in Fig. 4, during 20 minutes each team has to set (mostly a total of 60 or 100 according to the envisaged length of the discussion in minutes) chips onto each square thus weighing the relative importance of the effects of the project in the sense of a preliminary assessment which is handed over only to the trainer who acts a moderator
- this preparation time is designed to further foster the team and their internal roles: it is recommended to define internal roles, e.g. one responsible speaker per matrix element

New university campus (sum = 100 points)	economic	environmental	infrastructure	landscape	social
city population & neighbors		20			
students			10		5
business people	10				
the university operators	20				10
the City Council			20	5	

Tab. 1: an example for a matrix filled in by a team (text describing the meaning of the single matrix elements concretely is left out here)

- the rule for the level 3 discussions is as follows: randomly the trainer (or supporting software) selects one matrix square after the other and looks, which teams have set chips
- only teams having set chips discuss on the respective subject obeying the rule for the discussion time (if appropriate with 10 min. as a minimum)

(time in minutes) = (sum of chips set on this square) / (number of involved teams)

- the remaining teams at tables not having set chips *plus* the students belonging to the other theme (spectators outer part of Fig. 3) form the public with a right to vote (e.g. directly or also via the platform)
- the trainer marks start and end of the discussion (e.g. with an alarm clock or a software on the web) but refrains from participation in the content or procedure

- after the end of discussion the "public" has the following options for voting:
  - each single participating team has won the discussion
  - a concrete and substantial consensus was reached among the teams
  - no team has won the discussion (e.g. only seemingly a consensus)
- in case (1) only the winning team receives the reward according to the following formula, in case (2) all involved teams, in case (3) no team

(potential team's points ♂) = (sum of chips set on this square)

- the voting public may give a reason for their decision and receives 1 point for each posted reason
- criteria for polling are:
  - quality and clarity of academic argumentation
  - quality of communication of arguments
  - discipline in discussion
  - ability to perceive and understand other teams' arguments
- the trainer or else the software keeps record of all teams' point budget throughout the game
- a final session allows students to reflect on their performance in discussion, on expected and unexpected social processes (e.g. open or hidden alliances) and on achievements made.
- In a simplified form this level 3 will be used as web game (Ahamer, 2003).

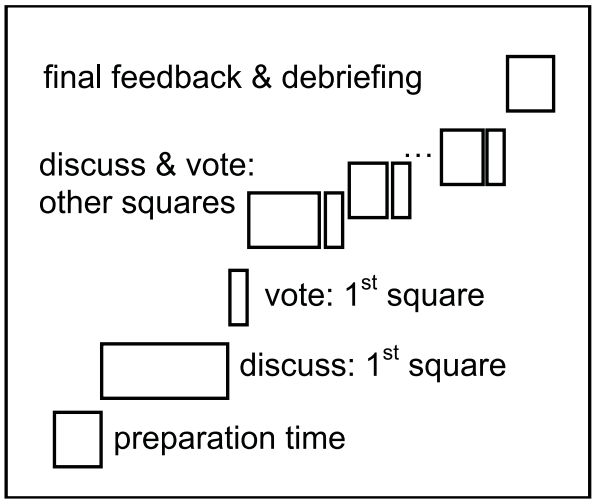

Fig. 4: time plan for level 3 discussions

Summing up, we see an atmosphere of competition in *level 3* which heads for an argumentative battle between standpoints. Different standpoints are induced and personalized by different teams playing different societal roles. The main interest of teams is to win or else to reach expression of consensus. Moments of play or even gambling are introduced by putting at stakes the relative weight of aspects (= matrix elements). Possibly realistic democratic (or even Machiavellian) effects are generated by the quite decisive voting procedure.

Results of level 3 are *decisions* between standpoints.

Social setting is vivid competition on the spot between teams who can develop strategies to win against others under sever time constraint.

2.5 Rules for level 4: negotiate a complex project

After having differentiated the complex theme into its aspects by means of the matrix and after having collected and weighed the arguments during the competitive discussion, the next task is to integrate the diverse aspects into a well-weighed compromise that can serve as a solution and that is accepted by the stakeholders.

- The same teams as in level3 prepare a proposal for a common solution for the theme's project during one week's time
- each team speaker posts this proposal in the platform one day before the level4 discussion event
- during the last day all team members study through the other teams' proposals critically with a view for enabling solutions to existing obstacles
- in class, all teams sit around a table and have to agree on a solution (= several items written down) after a period of ½ hour of self-organized discussion
- the text of the consensus must be posted and agreed on by all team speakers
- each team makes use of "external experts" (must be at least one expert, may be more) who is hired on a "free market of knowledge" functioning as follows:
  - each team in need of expert advice publicly writes (e.g. on the blackboard) the concrete question or the field for which aid is needed together with the number of points the team is willing to pay for successful advice
  - the team selects an expert from the persons answering to the call
  - the hired expert sits with the team during the discussion

(entire team pays points for expert aid ♂) → (successful expert receives points ♀)

- a total of 60 points is at stakes and will be attributed to each team after a final polling round that has only two options to vote for the present spectators (= roughly the other half of the class having chosen the other theme):
  - thumbs up: a real and profound consensus was found between all teams
  - thumbs down: no such consensus was found between all teams
- each voting student receives 1 point when posting a reason for the decision
- the entire process of level 4 and hence the involved work of an expert is defined successful if the majority of votes is "yes"

(potential team's points ♀) = (total of 60 points available)

Summing up, an atmosphere of co-operation and consensus (which is substantially different from 'compromise') should reign in *level 4*. The different standpoints are integrated into one coherent view and merged into an acceptable solution beneficial to the common good (which is modeled by the subgroup of present stakeholders).

Results of level 4 are *integrations* of adverse standpoints.

Social setting is calm consensus and co-operation. Different aspects of a complex theme are personalized by different (physically discernable) actors in class.

2.6 Rules for level 5: recognize and interpret complex megatrends

After having learned to integrate adverse standpoints that are physically visible as different teams and that defend their own importance by argumentation, gamers are led to the next step. Individuals or freely aggregated groups of students should become able to come up with the various sides of the medals by themselves and should train to view a complex matter from different sides.

For that target, students are asked to interpret complex reality as measured by global long-term trends which are taken from the author's "Global Change Data Base" (GCBD, see Ahamer, 2001). This interdisciplinary database shows data for the past three decades for practically all countries of the world for variables in the fields of economy, energy, population, land use, agriculture and forestry, human development indicators and social indicators. By means of regression analyses, the "analytical tool of the GCDB" provides graphically oriented as well as quantitative output which serves as a starting point for interpretations that weigh out intervening factors and could be capable of explaining recent global techno-socio-economic history for representative world regions.

The trainer takes the role to assess depth and clarity of these analyses, hence

(team's points ♀) = (reward given by the trainer for the quality of its analysis)

Summing up, a self-guided integrative (global) view is the target of level 5.
Results of level 5 are analytical texts in which main effects and side-effects are valued as such and properly assessed in their effect on reality.
Social setting is concentrated and consistent work (by singles or in teams) where the more active experiences of preceding levels are reflected, generalized and where social energy of the class calmly phases out.

3 Analysis of implementations of SGC

A thorough analysis of the social dynamics generated by SurfingGlobalChange is under preparation but not further elaborated in the present paper due to space limitations. Monitoring of the evolution of WBT and a literature review is done in an extra paper in this volume.

May SurfingGlobalChange enhance sustainable development!

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